Report of the WHO Workshop:

Training Programmes Integrating Public Health Laboratory and Applied Epidemiology

Fifth TEPHINET Scientific Conference

Kuala Lumpur, Malaysia

3 November 2008
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Abbreviations and acronyms

AFENET: African Field Epidemiology Network
BMBS: Bachelor of Medicine - Bachelor of Surgery
CDC: United States Centers for Disease Control and Prevention
CFIA: Canadian Food Inspection Agency
ECDC: European Centre for Disease Prevention and Control
EPIET: European Programme for Intervention Epidemiology Training
FELTP: Field Epidemiology and Laboratory Training Programme
FELVTP: Field Epidemiology Laboratory and Veterinary Training Programme
FETP: Field Epidemiology Training Programme
GERMS-SA: Group for Enteric Respiratory and Meningeal Disease Surveillance in South Africa
KEMRI: Kenya Medical Research Institute
MOH: Ministry of Health
NHLS: National Health Laboratory Services
NICD: National Institute for Communicable Diseases
NML: National Microbiology Laboratory
NPHL: National Public Health Laboratory
QMS: Quality Management Systems
SHSPH: School of Health Systems and Public Health
TEPHINET: Training Programmes in Epidemiology and Public Health Interventions Network
WHO: World Health Organization
WHO "Lab4Epi": WHO Laboratory Issues for Epidemiologists training toolkit
WHO-MDSC: WHO Multi-Disease Surveillance Centre
1. Background

Most of the 25 Field Epidemiology Training Programmes (FETPs) grouped in the Training Programmes in Epidemiology and Public Health Interventions Network (TEPHINET) Association focus on the development of field-trained epidemiologists who are competent in the practical application of epidemiologic methods to a wide range of public health problems in their respective areas.

During the past years, the emergence of diseases due to new pathogens has emphasized that good epidemiological surveillance systems and appropriate outbreak investigation depend on a functional public health laboratory system, and require a close collaboration between epidemiologists and laboratorians.

Epidemiologists need to know the capacities and limitationss of the laboratory diagnosis while laboratorians must understand modern epidemiological and biostatistical approaches to monitoring morbidity and mortality in the community, to detect and investigate outbreaks and evaluate the impact of control measures on health outcomes.

Both groups must speak a common language in order to respond efficiently to any public health event.

In order to reach this objective, some FETPs have integrated a laboratory training component. These Field Epidemiology and Laboratory Training Programmes (FELTPs) promote epidemiology and public health laboratory collaboration by providing joint epidemiology and laboratory leadership and management training; including public health laboratorians in field investigations; using laboratory data for surveillance purposes; and improving biosafety and quality assurance control in specimen collection, field transportation, and analysis. As a result, timely and reliable laboratory-confirmed disease data is available to public health officers to support evidence-based decision-making.

However, while the curriculum for an FETP is fairly standardized, there is not yet any clearly established programme design for FELTPs.

Part of the difficulty comes from the fact that epidemiologists and laboratorians are two different audiences with very different backgrounds, training and experiences. As a consequence, training these two groups together on common topics is a real challenge that some programmes, such as the Kenyan and South African programmes, have accepted to take on. Other programmes have strengthened the integration of the laboratory component into their curriculum, such as in India or Canada. In the future, the European Programme for Intervention Epidemiology Training (EPIET) plans to start a field microbiology training programme that will run in parallel to the epidemiology programme.

There is a need now to step back and evaluate what these diverse experiences can bring to the generic FETP model, to describe expectations, constraints, successes and challenges met in programmes which have moved from an FETP to an FELTP as well as to formulate recommendations on the most sustainable programme design(s).
2. Objectives

- Describe the diverse models that have been developed to integrate field epidemiology and laboratory issues into training programmes.
- Document the relevance of associating public health laboratorians with training programmes in applied epidemiology.
- Document challenges and strategies for the selection of appropriate candidates for FELTP.

3. Expected outcomes

- Development of a document summarizing the main findings of the group and proposing alternative models for such an integration.
- Creation of a working group to further advance the integration of epidemiology and laboratory in training programmes.

4. Pre-workshop activities

- A questionnaire was sent to the invited programmes: structured information was collected, such as profile of participants, type of curriculum, instructional methods and outcomes.
- Six programmes returned the completed questionnaire (see annex 3).
- Compilation of results were summarized and presented during the workshop to guide the group work discussion.

5. Participation

The following training programmes that have integrated a laboratory component were represented:

- Canadian Field Epidemiology Program
- Central Asian Field Epidemiology Training Program
- Ethiopian Field Epidemiology Training Program
- European Programme for Intervention Epidemiology Training
- Georgian Field Epidemiology and Laboratory Training Program
- German Postgraduate Training for Applied Epidemiology
- Indian Field Epidemiology Training Program
- Kenyan Field Epidemiology and Laboratory Training Program
- Malaysia Field Epidemiology Training Program
- Pakistan Field Epidemiology and Laboratory Training Program
- South African Field Epidemiology and Laboratory Training Program
- Tanzanian Field Epidemiology and Laboratory Training Program
- West African Field Epidemiology and Laboratory Training Program.
In addition, representatives from TEPHINET, the United States Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) attended the workshop (see annex 2).

6. **Summary of presentations and group work**

**OPENING**

Dr Pierre Nabeth opened the meeting and reminded participants of the rationale for holding the meeting, its objectives and expected outcomes.

**PRESENTATIONS**

6.1. **FETP to FELTP: needs, context, development process –**

   **Dr Peter Nsubuga, United States Centers for Disease Control and Prevention Division of Global Public Health Capacity Development**

**Definition of an FELTP**

- FETP that also trains laboratory scientists
- Competency-based curriculum (laboratory-based surveillance, outbreak response, public health laboratory management)
- Foster linkage between epidemiologists and public health laboratory scientists
- Enhance communication
- Build quality laboratory networks

**Goal of FELTPs**

The goal of FELTPs is to use laboratory data to improve surveillance and outbreak response.

**Role of laboratory systems**

Laboratory practice is a key component of public health infrastructure that is in line with the other essential capabilities of surveillance and epidemic investigation. These components are interrelated, so the goal of strengthening public health capacity is to achieve improvements in all three areas.

**Towards Field Epidemiology Laboratory and Veterinary Training Programmes (FELVTPs)**

The need to integrate veterinary and human epidemiology and laboratory practices will lead in the near future to the design of courses that integrate the three aspects.
Rwanda case study

The Rwanda case study is an illustration of the way FETPs in general and FELTPs in particular are planned and designed. Steps include the following.

- Pre-assessment.
- Deep assessment and stakeholders workshop to come to a consensus on needs, target audience and structure of the programme. In this case the needs were defined as follows:
  - develop a cadre of field epidemiologists (medical and veterinary) to spearhead the investigation of outbreaks and other acute health conditions and guide the health services in Rwanda;
  - develop public health laboratory epidemiologists and managers who will manage the laboratory services (both health and veterinary) in the country, improve and implement quality systems, and strengthen linkages with public health.
- Regarding laboratory, the needs are specified as follows:
  - no postgraduate programmes currently produce laboratory epidemiologists, despite the need;
  - the laboratory system needs strengthening below the national level;
  - there is a need to strengthen the linkage between laboratories and epidemiology at all levels;
  - there is a need to link public health laboratories with the veterinary laboratories.
- Programme design:
  - a two-year FELTP (25% didactic, 75% field) leading to a Masters degree in Applied Epidemiology and Surveillance with three tracks: (i) Field Epidemiology (four trainees for cohort one), (ii) Laboratory Management and Epidemiology (three trainees for cohort one), (iii) Veterinary Field Epidemiology (two trainees for cohort one);
  - several short courses for the current health personnel;
  - possibility to develop a shorter course leading to a Certificate in Field Epidemiology and Certificate in Public Health Laboratory Practice.
- Specification of competencies and of the profile of participants for each track.
- Tailoring design for each track.

6.2. Sharing experience on integrating laboratory and epidemiology components 1 – Dr Joe Oundo, Resident Advisor, Kenyan Field Epidemiology and Laboratory Training Program

Needs and goals

- Capacity development of highly skilled laboratory epidemiologists/managers for the Ministry of Health (MOH) leading to improved public health outcomes.
- Improved laboratory-based disease surveillance: frequency of reporting, extent and scope of reporting.
- Better laboratory management: quality assurance mechanisms, contribution of laboratory managers in policy decisions.
Target audience

Ministry of Health, Ministry of Livestock, Parastatal Agencies (e.g. Kenya Medical Research Institute (KEMRI)). From Kenya and neighbouring countries (the number of trainees from neighbouring countries is decreasing as they develop their national programmes).

Strategy for selecting candidates

- Advertisement in English language newspapers
- Short-listing of applicants by MOH
- Interview by programme staff and MOH
- Oral and short written interviews
- The candidates applying for the laboratory track must have a Honours degree and Bachelor of Science degree or Honours degree and Masters degree or Bachelor of Science degree.

Curriculum organization

- Two-year Master of Science degree programme, with two tracks: (i) Applied Epidemiology and (ii) Laboratory Management and Epidemiology.
- Five courses (a five-week course followed by shorter courses, for a total of 15 weeks as a whole), representing approximately 25% of the programme time.
- Most courses are common to epidemiology and laboratory trainees, except for:
  - EPI: Advanced Epidemiology (two weeks); Prevention Effectiveness (one week).
  - LAB: Laboratory Policy (two weeks); Laboratory Management (one week).

Main outcomes

As of 2004, 27 trainees have graduated, 10 of whom were in the laboratory track. Another cohort of 27 participants is presently being trained. The programme made it possible to train highly skilled health professionals working in their own (or neighbouring) countries. The programme is recognized by senior MOH leaders in Kenya as well as neighbouring countries. Other international agencies expressed their interest in supporting and collaborating with the programme.

Success stories

Achievements include: (i) the successful integration of the epidemiology and laboratory aspects in managing outbreaks of Rift Valley fever, Cholera, Measles, Ebola, Aflatoxicosis, (ii) the establishment of National Laboratory Data Section at the National Public Health Laboratory (NPHL), and (iii) Alumni\(^1\)’s desire to contribute back to the programme through their participation in FELTP, more specifically to work as laboratory field coordinator.

\(^{1}\) Alumni: all the graduates from a training programme/school/university
Main challenges

Inadequate epidemiology training for the laboratory track and inadequate laboratory training for the epidemiology track; lack of laboratory candidates within the MOH with requisite qualifications as required by the graduating university; lack of placement sites with adequate resources and field supervisors; no clear career path for graduates.

In conclusion

- The Programme has been well received by the MOH and alumni have been assigned to leadership positions within the MOH and the region.
- Residents and alumni have made immediate impacts through outbreak investigations and interventions as well as strengthening surveillance systems.
- Long-term impact on capacity building in the country could be achieved through improved resource mobilization and utilization by MOH and partners.

6.3. Sharing experience on integrating laboratory and epidemiology components 2 – “Integrating Public Health Laboratory and Applied Epidemiology” – Dr Faustine Ndugulile, Resident Laboratory Advisor, South African Field Epidemiology and Laboratory Training Program

Background

- The programme was initiated by the national Director of Health, in collaboration with the National Health Laboratory Services (NHLS), CDC, and the School of Health Systems and Public Health (SHSPH) of the University of Pretoria.
- Officially launched in May 2006.
- 35% didactic and 65% field experience.
- Master of Public Health degree awarded by the University of Pretoria.

Needs and goals

- Create a human resource for health to ensure that:
  - a robust surveillance system is established and used effectively;
  - acute public health events are detected, investigated and responded to quickly and effectively;
  - public health programme decisions are based on scientific data;
  - partnerships and networks among epidemiologists, laboratorians and other health workers are strengthened.
- In addition, the laboratorians will ensure that:
  - public health laboratory services are integrated at all levels of the health system;
  - laboratory quality systems are integrated in operations of public health laboratories.

Career paths

It is anticipated that the graduates of the course will carry out the following functions.

- **Epi Track**: senior positions within the national and provincial departments of health involved in surveillance, outbreak management and data management.
- **Lab Track**: the graduates of the course will be recruited in senior position within the national laboratory system, where they will be able to advise on ways to improve disease surveillance, outbreak and data management.

**Expected outcomes**

- Graduates from the programme will be equipped with appropriate analytical skills and knowledge to identify public health problems and, through epidemiological and effective public health laboratory practice, design solutions to those problems, as well as plan and execute scientific research.
- Greater communication and understanding between the two disciplines of epidemiology and laboratory medicine.

**Target audience and selection**

- For the epidemiology track, health workers working in national or provincial departments of health are given priority. The requirements are:
  - a degree in medicine, dentistry or veterinary science with a minimum of two years working experience, or
  - a Bachelor's degree in biological or health sciences, with a minimum of five years working experience, or
  - a Bachelor of Science degree with a minimum of three years applicable working experience, or
  - an Honours degree with a minimum of two years working experience.

- For the laboratory track, the target is NHLS laboratory personnel involved in laboratory surveillance systems, outbreak response and data management. The requirements are:
  - a degree in medicine, dentistry or veterinary science with a minimum of two years working experience, or
  - a Bachelor of Science degree with at least two years working experience within a clinical or public health laboratory, or
  - an Honours degree of Science with at least two years working experience within a clinical or public health laboratory.

**Curriculum Organization**

- Two tracks (Lab and Epi) lead to the same degree, with a significant proportion of shared modules.
- Shared modules include: Basic Epidemiology and Biostatistics, Disease Surveillance, Data Management, Monitoring and Evaluation, Principles of Communicable Disease Control, Outbreak Investigation and Control, Analytic Epidemiology, Scientific Writing.
- Specific laboratory modules include: Advanced Laboratory Methods, Laboratory-related Health Policy and Systems, Clinical and Public Health Microbiology, Principles of Quality Assurance and Quality Management Systems (QMS).
- Field work: the two cohorts carry out field work together for the core modules that they take together. In the second year, the residents carry out field work based on their track.
  - National/provincial departments of health: broad, front-line public health experience, surveillance, investigation, data management and intervention.
  - NHLS/ National Institute for Communicable Diseases (NICD): specialized, disease- or problem-specific experience (e.g. Group for Enteric Respiratory and Meningeal
disease Surveillance in South Africa (GERMS-SA)), laboratory-based surveillance, investigation, public health laboratory practice.

Benefits of improved collaboration between epidemiologists and laboratorians

- Better communication and team cohesion.
- Better preparedness and response in the event of outbreaks.
- Better linkages between epidemiological and laboratory surveillance systems.

Challenges

Ensuring the candidates acquire the appropriate competences.

Conclusion

It is important to integrate the Epi and Lab training in order to achieve the following while addressing public health issues:

- teamwork
- networking
- cohesion
- system continuity
- better communication
- better response

6.4. Sharing experience on integrating laboratory and epidemiology components 3 – “Strengthening the laboratory component of the India FETP: The 2004-08 experience” – Dr Yvan Hutin, Resident Advisor, Indian Field Epidemiology Training Program

Background

The Indian and Chennai FETP are targeting epidemiologists only.

- Audience and selection: in service Bachelor of Medicine - Bachelor of Surgery (BMBS) candidates assigned to the public health system (e.g. district).
- Curriculum organization: three-month start-up course; three-week to one month course every six months; Remaining (18 months) in the field (district).

Needs and goals for the integration of a laboratory component

In 2004, many outbreaks in India were not confirmed by laboratory investigations.

- The objective was to obtain confirmation for outbreaks.
- Challenges included (i) knowledge issues, as scholars did not know how to proceed, and (ii) infrastructure issues, with poor or no access to laboratory and some states with no local capacity.
Activities

- Participation in the development of the WHO “Laboratory issues for epidemiologists” module (WHO “Lab4Epi”).
- Pilot testing of the full one-week course in Chennai, India, October 2005.
- Subsequently, inclusion of key points (two-day module) in the induction course: testing strategy, specimen collection and/or transport, cholera case study.

Results

- The full one-week course was appreciated but has limitations. It was too long, needed the input of a laboratory specialist, and was heavy on facts, but light on skills and/or attitudes (e.g. interpretation of combined laboratory and/or epidemiology data).
- Mainstreaming key elements increased the proportion of outbreaks confirmed by laboratory investigations. The course contributed to increased motivation of key players. Moreover, “getting the job done” created precedents and helped build the network.

Issues and/or unmet needs

- The module is too long to allow for its systematic and full integration into the training programme.
- Key factual points could be better communicated with other tools (e.g. job aids).
- New learning tools would be useful to build stronger attitudes.

Suggested improvements

- Develop a shorter version of the course with a stronger focus on making sense of the evidence and/or interpretation.
- Prepare job aids (e.g. a pocket guide).

6.5. Sharing experience on integrating laboratory and epidemiology components 4 – “Integrating essential lab training in a conventional FETP program: “Lab for Epi” in Canada – Dr Robert Pless, Program Director, Canadian Field Epidemiology Program

Background

The Canadian FETP is a two-year course for public health professionals.

- Focus is on a field epidemiology audience and epidemiologists who are involved in outbreak investigations.
- It consists of six weeks of modules and courses, and a training conference. Courses are open to external participants, including international participants.
- Field epidemiologists are placed at national, regional and local levels.
- Field work includes: placement-related investigations, data analyses and special projects, writing protocols, responding to public inquiries, mobilization for outbreak response (EpiAid, international).
• Training and field support for special needs: surveillance evaluation, surveillance for mass gathering and development and delivery of courses.

Needs and goals for the integration of a laboratory component

• To enhance communication between laboratory specialists and epidemiologists through increased understanding of the laboratory role in public health investigations of infectious diseases.
• To enable field epidemiologists to effectively integrate knowledge of laboratory networks in the context of a field investigation.

Activities to integrate a laboratory component

• A brief introduction to the role of laboratory in field investigation during the “Epi in Action” introductory course.
• A “laboratory for epidemiologists” module held every two years (November):
  ▪ four day module for all field epidemiologists and selected external participants;
  ▪ held at the National Microbiology Laboratory (NML) in Winnipeg and driven by laboratory staff.
• An arrangement to include a field epidemiologist with the NML mobile laboratory:
  ▪ during deployment of the laboratory during training exercises;
  ▪ providing the opportunity for field epidemiologists to take live agent training.
• Potential to deploy with the laboratory for a real investigation or mass gathering surveillance.

Description and results of the “Lab4Epi” module, piloted in November 2007

• Learning objectives:
  ▪ describe the Public Health laboratory networks in Canada (role of the different laboratories);
  ▪ describe the role of laboratory surveillance in Canada and its impact on outbreak detection and investigation;
  ▪ understand specimen collection, transport and testing (what to collect, when and how, what tests to ask for);
  ▪ understand commonly used microbiology techniques for pathogens seen most frequently in field investigations;
  ▪ understand the route of a specimen through the laboratory system;
  ▪ critically interpret and integrate laboratory results in the context of a public health investigation;
  ▪ collaborate with the laboratory for optimal field investigation practices (communicate effectively with laboratory professionals);
  ▪ provide the epidemiological interpretation of the laboratory results in the context of the field investigation (develop strategies when laboratory results are not supported by epidemiological evidence).
• Audience and prerequisites:
  ▪ primarily focused on a field epidemiology audience;
  ▪ participants should have an understanding of basic microbiology;
  ▪ the inclusion of laboratory staff was possible, in order to enhance greater understanding of the role of laboratory in field investigation — it is important to note, however, that a module that would really support the learning of both targets at the same time would require work to re-design appropriate learning materials.
• Feedback from participants:
role of NML, Canadian Food Inspection Agency (CFIA), provincial laboratories, hospital laboratories, local laboratories;
which tests should be considered for which pathogens;
disease testing algorithms;
practical examples and online training for the basics;
more hands-on activities, clearer explanations, enhanced visuals, “walk through” of testing and interpretation, etc.;
prior reading material, glossary of terms, table of tests, etc.;
more extensive adaptation of WHO lectures to Canadian context.

Main challenges:
• adapting and/or designing appropriate course material;
• meeting the needs of diverse participants, different backgrounds;
• finding time within the programme to incorporate laboratory for epidemiologists training;
• designing outcome measures, evaluation of the outcome of this integration.

Conclusion

• An improved version of the course will be organized in November 2009.
• The laboratory for epidemiologists is and will stay a component of the Canadian FETP, with a goal of building a bridge with the laboratory for greater mutual understanding of roles and capabilities/capacity.
• The challenge is to develop the ideal course materials to achieve this goal.
• The vision: the field epidemiologist is always welcome in the laboratory.

6.6. Sharing experience on integrating laboratory and epidemiology components 5 – Summary of experiences – Ms Anouk Berger, Technical Officer (training), WHO Headquarters - WHO Lyon Office

This presentation summarized information collected from the following
• Questionnaire sent to the participants of the workshop (see annex 2) and completed by Canada, the European Centre for Disease Control (ECDC), Georgia, Kenya, Pakistan, South Africa, Tanzania.
• The four above presentations.

Expressed needs and goals for the laboratory-epidemiology integration

• To build/strengthen laboratory-based surveillance.
• To improve Lab-Epi collaboration for detection, investigation, confirmation and response.
• To improve (laboratory) data-management.
• To build/strengthen a laboratory network (national, international).
• To improve laboratory quality management.
• To improve laboratory-based research for public health.
Audience and selection include the following

- Equivalent to Bachelor of Science — Master preferred by ECDC
- One to three years of experience. For example, ECDC requires at least one year, Pakistan two years and Kenya several years of experience.
- Some challenges expressed include:
  - limited pool of qualified laboratory candidates (Kenya, Tanzania, South Africa);
  - prior knowledge of epidemiology and surveillance is sometimes insufficient.

Curriculum organization

Two models were identified.

- Model one: the training programme targets both epidemiologists and laboratory staff and leads to the same degree, with different specializations OR to two separate degrees. In the figure below, the two tracks are represented by the horizontal bars; the vertical bars represent the face-to-face sessions with the green part being the common modules and the blue and yellow parts the specific modules.

Main outcomes

- Model one: graduates from the laboratory track are now placed in key functions in the system; reporting and collaboration in the field are improved;
- Model two: outbreaks are better confirmed, however the module (WHO "Lab4Epi" training toolkit) is too long, and is more focused on knowledge acquisition rather than skill acquisition.
Main challenges

- Model one:
  - the selection of candidates is sometimes difficult for the laboratory track as potential candidates often do not have the level required by the university;
  - placement sites and facilities in intermediate and peripheral levels are often difficult to find;
  - mentorship of the residents at the placement sites is difficult to set up;
  - development of career paths for the graduates of the programme is often long;
  - striking the right balance between laboratory and epidemiology contents is not obvious (when should it be general and when should it be specific?);
  - laboratory studies often cost more than epidemiological studies, sometimes leading to an increase of the cost of field work for the laboratory track.

- Model two:
  - finding time within the programme to incorporate the lab for epi module is not always easy;
  - training materials should focus more on skill acquisition;
  - a framework for the evaluation of the outcome of such a module should be designed

Questions identified for the group work session

Needs and goals

- What are the other goals of such programmes?
- What do we expect from training?
  - laboratory staff with an epidemiology "culture"?
  - epidemiologists with a laboratory "culture"?
  - hybrids mastering both epidemiology and laboratory: "the laboratory epidemiologist"?

Audience and selection

- When there is a limited pool of qualified laboratory candidates: is it possible to accept trainees with a lower educational level? If yes, how can courses be designed and conducted for a group of trainees that is heterogeneous in terms of educational levels?
- Even if they have the same level: if the finality of training is not the same for epidemiologists and microbiologists, how can joint courses be best organized and be relevant for both target groups? (i.e. biostatistics are applied differently by both target audiences).

Curriculum organization

- In model one, how can contents be balanced depending on targets and objectives?
- Could other models be envisaged, such as an FETP organizing workshops for different target groups, such as laboratory staff (or veterinary staff)?
7. Discussion and group work

Additional needs for integration

- Lack of human resources with knowledge and skills meeting laboratory requirements, combined with the background of epidemiology.
- Poor interpretation of laboratory results across different sectors.
- Lack of awareness between the two disciplines. For instance, epidemiologists need to understand specimen collection, transportation and interpretation of results. They also need to be equipped with basic knowledge to handle the situation in the field. The same applies to laboratory staff regarding epidemiology.
- Insufficient collaboration across sectors; there is a need for management and teamwork across the two disciplines.
- Possible need for benchwork for epidemiologists (learning by doing).

Additional goals (identified for integration of the two disciplines)

- Enhanced communication and collaboration between the sectors at each phase of analytical cycle, through shared experienced and identification of common functions.
- Effective specimen collection, based upon symptomatic information.
- Development of laboratory algorithms for public health.
- Laboratory professionals participate in the decision-making process.

However, it is important to stress that the aim is not to transform an epidemiologist into a laboratory professional or vice versa.

Curriculum organization

- Integration of audiences is important, for sharing culture and practice, and for carrying out joint activities.
- If the basic laboratory infrastructure is good, model two (FETP with a “laboratory issues for epidemiologists” module) is probably sufficient, whereas if the country has no laboratory infrastructure, model one, integrating the two target audiences, could be seen as the best capacity strengthening solution. Some participants, however, challenged this statement, wondering if the role of a field epidemiology training programme is really to strengthen laboratory infrastructure.
- For FELTPs:
  - even if there are elements that will be common between countries, the specifics regarding the laboratory component will be very different from one programme to another, as they should be related to the specificity of the national context;
  - it is important to strike the right balance between what content should be common to both target audiences and which one should be specific to each particular audience.
- For FETPs with a laboratory component:
  - trainees can be sent to a laboratory for a short period of time; for example, in the Thai FETP, trainees are sent to the laboratory for one month;
  - need for a pocket WHO "Lab4Epi” guide, to be easily carried and used in the field.
- Other models:
  - it is possible also to expose the laboratory specialists to short “epidemiology for laboratory professionals” courses (i.e. as planned for the Pakistan programme); this type of course has been developed by African Field Epidemiology Network (AFENET) ("epidemiology for non epidemiologists” short training module).
• The combination of long track FE(L)TPs and short courses (epidemiology for non-epidemiologists, and laboratory for non-laboratory professionals) is seen as the best strategy to reach the whole needed target audiences in the long term.

**Target audiences**

Ways to deal with heterogeneity:

• utilize case studies to leverage the different levels of experience;
• provide additional information and support to participants;
• incorporate additional mentorship or practical field exercise;
• more training by doing;
• add problem solving skills;
• emphasize learning in context for application in the context.

**Challenges**

• Regarding FELTPs, it may be a challenge to keep laboratory professionals within the laboratory system, after they have been trained in epidemiology. The development of proper career paths for laboratory professionals would decrease this risk.

## 8. Next steps

Dr Pierre Nabeth closed the workshop proposing the following next steps, which were agreed by participants:

• Preparation of the report, amendment by participants and dispatching of the CD-Rom with related materials.
• Constitution of working groups to work on:
  ▪ a paper summarizing the results obtained by the existing models of lab epi integration;
  ▪ the improvement of the WHO “Lab4Epi” training toolkit;
  ▪ the development of an “Epidemiology for Laboratory staff” training toolkit”.

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# Annex 1 – Agenda

## 3 November 2008

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<th>Time</th>
<th>Session</th>
<th>Presenter/s</th>
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<tbody>
<tr>
<td>14:15 – 14:30</td>
<td>Welcome, introduction of participants and objectives of the workshop</td>
<td>Dr Pierre Nabeth</td>
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<tr>
<td>14:30 – 14:45</td>
<td>From FETPs to FELTPs: needs, context and development process</td>
<td>Dr Peter Nsubuga</td>
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<td>14:45 – 16:00</td>
<td>Proposed methodology and introduction of the panel Sharing experience on integrating laboratory and epidemiology components: Kenyan FELTP South African FELTP Indian FETP Canadian FETP</td>
<td>Ms Anouk Berger, Dr Joe Oundo, Dr Faustine Ndugulile, Dr Yvan Hutin, Dr Robert Pless</td>
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<td>16:00 – 16:15</td>
<td>Break</td>
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<td>16:15 – 17:15</td>
<td>Introduction to the group work Group work</td>
<td>Ms Anouk Berger, All participants</td>
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<tr>
<td></td>
<td>- Describe the existing models: needs, goals, targets, expected outcomes and organization</td>
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<td>- Document the relevance and challenges of associating both target groups</td>
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<td></td>
<td>- Compare the outcomes with the needs and goals; Document challenges of the existing models</td>
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<td>17:15-18:00</td>
<td>Sharing the results of the group work Draft terms of references for a working group on the “Integration of laboratory and epidemiology components in FE(L)TPs”</td>
<td>Dr Pierre Nabeth, Dr Philippe Dubois, Ms Anouk Berger</td>
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<td>Next steps and conclusions</td>
<td>Dr Pierre Nabeth</td>
</tr>
</tbody>
</table>
Annex 2 – List of participants

Training Programmes

**Canadian Field Epidemiology Program**  
Dr Robert Pless, Program Director

**Central Asian Field Epidemiology Training Program**  
Dr Simon Ajeilat, Resident Advisor

**Ethiopian Field Epidemiology Training Program**  
Dr Amha Kebid, Director  
Dr Richard Luce, Resident Advisor

**European Programme for Intervention Epidemiology Training**  
Dr Viviane Bremer, Chief Coordinator

**Georgian Field Epidemiology and Laboratory Training Program**  
Dr Naile Malakmadze, CDC Georgia

**German Postgraduate Training for Applied Epidemiology**  
Dr Katharina Alpers, Coordinator

**Indian Field Epidemiology Training Program**  
Dr Manoj Murhekar, Coordinator  
Dr Yvan Hutin, Resident Advisor

**Kenyan Field Epidemiology and Laboratory Training Program**  
Dr Eric M. Muchiri, Director  
Dr Joe Oundo, Resident Advisor  
Dr Zipporah Nganga  
Dr Solomon Mpoke, Kenya Medical Research Institute

**Malaysia Field Epidemiology Training Program**  
Dr Fadzilah Kamaludin  
Dr Chua Kaw Bing, Consultant Virologist, National Public Health laboratory  
Dr Lokman Hakim

**Pakistan Field Epidemiology and Laboratory Training Program**  
Dr Jawad Asghar, Resident Advisor  
Dr Jamil A Ansari, Microbiologist, Public Health Laboratories - National Institute of Health

**South African Field Epidemiology and Laboratory Training Program**  
Dr Chris Tetteh  
Dr Faustine Ndugulile, Laboratory Resident Advisor  
Dr Elizabeth Prentice  
Dr Bernice Harris
Thai Field Epidemiology Training Program
Dr Chulee Jiraphongsa

Tanzanian Field Epidemiology and Laboratory Training Program
Dr Peter Mmbuji
Dr Fausta Mosha, Laboratory Resident Advisor

West African Field Epidemiology and Laboratory Training Program
Dr Kader Kondé, WHO–Multi-Disease Surveillance Centre (MDSC), Ouagadougou, Burkina Faso
Dr Sennen Hounton, WHO–Multi-Disease Surveillance Centre (MDSC), Ouagadougou, Burkina Faso

Networks and Technical Agencies

African Field Epidemiology Network
Dr David Mukanga
Dr Monica Musenero

European Centre for Disease Prevention and Control
Dr Carmen Varela Santos, Senior Expert, Epidemiological Training,

TEPHINET
Dr Dionisio J. Herrera, Director

United States Centers for Disease Control and Prevention - Division of Global Public Health Capacity Development
Dr Patricia Simone, Director
Dr Peter Nsubuga
Dr Henry Walke
Dr Ed Maes
Mr Eric Gogstad, Public Health Advisor

World Health Organization

Office of the WHO Representative, Indonesia
Dr Gina Samaan, Field Epidemiologist

Office of the WHO Representative, Thailand
Dr Augusto Pinto, Medical Officer

Regional Office for Africa (AFRO)
Dr Peter Gaturuku, Epidemiologist and Training Officer

Headquarters - Lyon Office
Dr Pierre Nabeth, Country Surveillance and Response Strengthening (Coordinator, a.i.)
Dr Philippe Dubois, Laboratory Quality and Management Strengthening (Training)
Ms Anouk Berger, Country Surveillance and Response Strengthening (Training)
Annex 3 – Questionnaire

(1) Name: ______________________________________________________

(2) Country: ________________________________

(3) What are the
   (a) Specific objectives of your programme?
   (b) Expected outcomes of the integration of the laboratory and epidemiology components in your training programme?

(4) What is/are
   (a) Your strategy(ies) for selecting candidates:
      o Education?
      o Qualification?
      o Experience?
      o Function within the system?
   (a) The challenges that you may have faced while implementing it?

(5) How is the integration of the laboratory and epidemiology components organized in your degree programme?
   (a) Same degree, with two different options/specializations?
   (b) Two separate degrees?
   (c) One degree with specific workshops or modules on laboratory issues?
   (d) Others?

(6) How is field work organized?
(a) How are field work assignments chosen?

(b) Are laboratory participants placed at national, provincial, or district laboratories?

(7) Are there different core learning activities or competencies required for laboratory participants?  
   Please circle your answer

   (a) Yes  
   (b) No  
   (c) Not applicable  
   If your answer is yes, please list the different core learning activities or competencies.

(8) What are the main outcomes of the integration of laboratory and epidemiology in your training programme, for example:

   (a) Number of trainees who graduated per year? If two tracks, please specify the number for each target audience.

   (b) Current position(s) of laboratory graduates within the national system?

   (c) Benefits of improved collaboration between epidemiologists and laboratorians?

   (d) Success stories regarding the integration of laboratory and epidemiology? For example, increase of laboratory reporting in the surveillance system, improved sample management, increased rapidity in diagnosis…

   (e) Others?

(9) What are the main challenges you are facing in integrating the laboratory and epidemiology components in your programme?

(10) Do you have any additional comment/information you would like to share on this matter?